UDMCB

Economical 100V/40A, Dual & Single Axis PCB Mounted EtherCAT® Drive Module

Powerful and Compact

- Two drives per module for Gantry control
- Voltage: 12-60Vdc or 12-100Vdc
- Current: from 3.3/10 to 13.3A / 40A (cont./peak)
- PCB mounted to enable customised connectivity

Outstanding Speed and Resolution

- Up to 3 Analog Sin-Cos 1Vptp encoders with frequency up to 500KHz
- Encoder multiplication of 4 to 4,096
- Automatic encoder offsets and gain compensation and error detection
- Dual feedback support
- Relays control outputs for motor dynamic braking

Smart Motion Related I/O

- 4 encoder registration MARK inputs
- 2 Position Event Generator (PEG) outputs
- 2 motor brake / relay outputs
- 2 analog inputs, 12 bit resolution, ±10V or 0-10V
- 2 analog outputs, 10 bit resolution, ±10V
- Safe Torque Off (STO)

UDMCB mounted on a carrier board

The UDMCB is a line of economical and compact PCB mounted EtherCAT drive modules.

The UDMCB is specifically designed to complement the highest performance NPM *NanoPWM™* drives and address the needs for a more economical drives. It has the same form factor as the NPMPC and same connectivity.
One customized carrier board can be used for both modules.
Such a carrier board design enables customization of connectors, I/O configuration, STO and other safety related functions.

For prototype testing and carrier board design reference it is recommended to use the UDMPA.

The UDMCB is a slave that runs under any ACS EtherCAT masters.

A comprehensive set of software support tools are provided for configuration, setup and tuning.

In-Position Technologies
www.iptech1.com

CE, UL (Recognized)

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Specifications

Per Drive	A	B	C	D
Cont./peak output current Sine amplitude [A]	3.3/10	6.6/20	10/30	13.3/40
Cont./peak output current [Arms]	2.3/7	4.6/14.1	7/21.2	9.4/28.2
Maximum cont. input current [Arms]	2.6	5.3	8	10.6
Maximum cont./peak output power @ 60Vdc [W]	150/460	310/920	470/1380	610/1850
Maximum cont./peak output power @ 100Vdc [W]	260/780	520/1560	790/2340	1050/3120
Peak current time [sec]	1			
Minimum load inductance @100Vdc [mH] Can be derated linearly for lower voltages	0.05			

Per Module				
Control voltage input [Vdc]	24 ±10%			
Drive voltage input range [Vdc]	12-60Vdc (56 recommended) 12-100Vdc (96 recommended)			
Maximum drive output voltage [Vdc]	(Vin motor) x 92%			
Maximum cont. input current [Arms]	5.2	10.6	16	21.2
Maximum heat dissipation @ 60Vdc [W] (i = no. of drives)	6 + 0.7 x i	6 + 1.7 x i	6 + 2.9 x i	6 + 4.1 x i
Maximum heat dissipation @ 100Vdc [W] (i = no. of drives)	6 + 0.9 x i	6 + 2.1 x i	6 + 3.7 x i	6 + 5.6 x i

Drives

Type: digital current control with field oriented control and space vector modulation.
Current ripple frequency: 40 kHz.
Current loop sampling rate: 20 kHz.
Current dynamic range: 1,500:1.
Programmable Current loop bandwidth: up to 5 kHz.
Commutation type: sinusoidal. Initialization with or without Hall sensors.
Switching method: advanced unipolar PWM.
Protection: Over and under voltage, Phase to phase and phase to ground short, Over current, Over-temperature.

Supplies

The module is fed by two power sources. A motor supply and a 24Vdc control supply. During emergency conditions there is no need to remove the 24Vdc control supply. (If STO is used, then there is also no need to remove the motor supply).
Motor Drive Supply:
Range: 12Vdc to 60Vdc or 12Vdc to 100Vdc,
Recommended range: 12-56Vdc for 60Vdc version, 12-96Vdc for 100Vdc version.
Current rating should be calculated based on actual load.
If regeneration resistor is required, it should be added in parallel to motor supply with activation at 62V for 60V version or 102V for the 100V version.
Control Supply:
Range: 24Vdc ± 10%.
Maximum input current / power: 1A @ 21.6V/ 20W.
Protection: reverse polarity. A 2A external fuse must be used.

Motor Types

Two- and three-phase permanent magnet synchronous (DC brushless/AC servo), DC brush, Voice coil, Two- and three-phase stepper (micro-stepping open or closed loop).

Feedback

Types: Incremental digital encoders (AqB), Hall inputs, analog Sin-Cos (optional).
Incremental Digital Encoder: One per axis. A&B, I and Clk/Dir,
Type: Differential RS-422. Max. rate: 50M quad counts/sec.
Protection: Encoder error, not connected.
Sin-Cos Analog Encoder: One per axis + one (see ordering options).
Type: 1Vptp, differential.
Programmable multiplication factor: x4 to 4096.
Maximum frequency: 500kHz.
Maximum acceleration with Sin-Cos encoder: 10^8 sine periods/second^2.
Absolute Encoder (optional): Contact ACS.
Hall inputs: A set of three per axis.
Type: single-ended, 5V, source, open cathode. Input current: <7mA.
Feedback supplies: For all digital feedback devices: 5V, 0.5A (DGND).
For all analog feedback devices: 5V, 0.5A (AGND).
It is recommended to include a dedicated supply on the carrier board.

Digital I/O

For different I/O configurations see ordering options.
Inputs
Safety: Left & right limit inputs per axis.
Type: 5/24V Sink/Source, single ended, opto-isolated. Input current 4-14mA.
Registration Mark: (High Speed Position Capture): Four, 5V/24V ±20% opto-isolated, two terminals. Input current 4-14mA.
All dedicated inputs can be used as general purpose inputs.
Dedicated motor over temperature protection: for each axis.
Outputs
Motor Mechanical Brake: Two, 5/24V Sink/Source, single ended, opto-isolated, 0.1A.
PEG (Position Event Generator): Two, Pulse or State, Differential, RS422.
Pulse width: 26nSec to 1.75mSec. Maximum rate: 10MHz.
All dedicated outputs can be used as general purpose outputs.

Analog I/O

Analog Inputs: Two, 0-10V or ±10V, differential, 12 bit resolution.
Max. input frequency: 1 kHz. Offset: <100mV.
Analog Outputs: Two, ±10V, differential, 10 bit resolution.
Offset: ±100mV, Bandwidth: 5 kHz. Max. output load: 10KΩ, Noise/Ripple: <40mV.

STO (Safe Torque Off) - Optional

Supports STO implementation on the carrier board.

EtherCAT Communication

In and Out.

Environment

Operating range: 0 to + 40°C.
Storage and transportation range: -25 to +60°C.
Humidity (operating range): 5% to 90% non-condensing.

Dimensions

155 x 85 x 30 mm^3.

Weight

320 gr.

Ordering Options

Ordering options	Field	Example user selection	Optional Values
Number of axes/drives	1	2	1, 2
Current	2	A	A – 3.3/10A B – 6.6/20A C – 10/30A D – 13.3/40A
Maximum Voltage	3	A	A – 60V B – 100V
500kHz Sin-Cos encoder interface	4	0	0, 1, 2
Absolute encoders type *	5	N	N – None
Number of Absolute encoders interface *	6	0	0
Limit Switch	7	C	A – 5V, Source/PNP, B – 5V, Sink/NPN, C – 24V, Source/PNP, D – 24V, Sink/NPN
Digital Inputs	8	B	A – 5V, two-terminal B – 24V, two-terminal
Digital Outputs	9	A	A – 5V & 24V, Source/PNP B – 5V & 24V, Sink/NPN
Special Options	10	N	N – None A – 3rd Sin-Cos encoder, replacing the two analog inputs.

* Absolute encoders are currently not supported.

Example: UDMcb2AA0N0CBAN

Field		1	2	3	4	5	6	7	8	9	10
PN	**UDMcb**	2	A	A	0	N	0	C	B	A	N

ACS MOTION CONTROL